

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization  
International Bureau



(43) International Publication Date  
22 March 2001 (22.03.2001)

PCT

(10) International Publication Number  
WO 01/20517 A2

(51) International Patent Classification<sup>7</sup>: G06F 17/60

(74) Agents: REED, T., David et al.; The Procter & Gamble Company, 5299 Spring Grove Avenue, Cincinnati, OH 45217-1087 (US).

(21) International Application Number: PCT/US00/24925

(22) International Filing Date:  
12 September 2000 (12.09.2000)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:  
60/154,627 17 September 1999 (17.09.1999) US

(71) Applicant: THE PROCTER & GAMBLE COMPANY [US/US]; One Procter & Gamble Plaza, Cincinnati, OH 45202 (US).

(72) Inventors: WILKER, Thomas; 3771 Isabella Avenue, Cincinnati, OH 45209 (US). AMPULSKI, Robert, Stanley; 5674 Red Oak Drive, Fairfield, OH 45014 (US). STEVENS, Tiffany, April; 9814 Village View Court, Cincinnati, OH 45241 (US). WATTS, Bradley, Michael; 2770 Geraldine Drive, Cincinnati, OH 45239 (US). WALTHER, Rachael, Eden; 5455 Springdale Road, Cincinnati, OH 45251 (US). TARVARDIAN, Diane, Marie; 2868 Ziegler Avenue, Cincinnati, OH 45208 (US). RUBIN, Michael, Lewis; 6280 Trailwood Court, Mason, OH 45040 (US). STEINHARDT, Mark, John; 8387 Chesney Lane, Cincinnati, OH 45249 (US).

(81) Designated States (national): AE, AG, AL, AM, AT, AT (utility model), AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CR, CU, CZ, CZ (utility model), DE, DE (utility model), DK, DK (utility model), DM, DZ, EE, EE (utility model), ES, FI, FI (utility model), GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KR (utility model), KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SK (utility model), SL, TJ, TM, TR, TT, TZ, UA, UG, UZ, VN, YU, ZA, ZW.

(84) Designated States (regional): ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG).

Published:

— Without international search report and to be republished upon receipt of that report.

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

WO 01/20517 A2

(54) Title: METHOD FOR OBTAINING CONSUMER INFORMATION

(57) Abstract: A method of testing consumer products. Representative consumer products are created by a computer-based 3-D modeling program or are input via scanner or digital photography. Virtual images of the computer product are merged with test questions to make a virtual consumer test. The consumer test is shown to the representative consumers, either directly via the computer or indirectly by other photographic means. The consumer's responses to the test are input to the computer via any input device such as a mouse, keypad, touch screen or microphone. Data therefrom may be automatically tabulated and summarized. The consumer test may be limited to Intranet testing for enhanced security.

## METHOD FOR OBTAINING CONSUMER INFORMATION

5

## FIELD OF THE INVENTION

The subject invention relates to a process for obtaining information about consumers' likes and dislikes of, and preferences for and aversions against, various consumer products and product variations.

10

## BACKGROUND OF THE INVENTION

Consumers purchase products every day. Consumer purchases range from the large, elaborate and expensive products, such as homes, mutual funds and automobiles, to the small, mundane and inexpensive products, such as bath tissue, salted snacks and tampons. One common denominator desired by the 15 seller of all consumer products is to provide a consumer-preferred product. The consumer-preferred product will be purchased in lieu of less preferred products offered by competitors and potentially earn a premium position in the marketplace.

Consumer preferences include both functional and non-functional 20 attributes of the product. Non-functional attributes include the aesthetic appearance, e.g., colors, specific decorative effects, and even the presence or absence of ornamentation. Functional attributes include features ranging from size and shape, to the perceived product effectiveness, to instructions or other information about the consumer product, to preferences for the specific 25 ergonomics and the intended use environment of the consumer product.

However, determining which products are the consumer-preferred products can be time consuming, expensive and laborious. Typically, prototype products have to be designed. Then a suitable number of prototypes have to be

manufactured. The prototypes have to be distributed to an appropriate number of representative consumers. The representative consumers are then presented with the products for viewing. Upon viewing, and occasionally using, the prototypes, the representative consumers provide feedback regarding their 5 preferences, likes, dislikes, etc. The manufacturer then receives the data from the representative consumers, tabulates the data and optimizes the product. Then, in an iterative fashion, the whole process begins again.

Obviously, this process can be time consuming, laborious and expensive. Simply mocking up and manufacturing the prototypes can be very expensive. 10 Distributing the prototypes to representative consumers involves logistical planning and problems. Even showing the prototypes to representative consumers entails security risks. The representative consumers may divulge details about the prototypes to third parties. The representative consumers may not return the prototypes, further compromising their security. This may lead to 15 loss of competitive advantage. Tabulating the data is a time-consuming and labor-intensive process involving the reduction of oral comments to writing, the recordation of written responses for data reduction and statistical analyses of quantitative data.

Furthermore, when the representative consumer handles the prototype 20 product, it is often in an artificial, sterile environment. Prototypes are frequently viewed, handled and discussed in focus groups. The prototype products may not be seen in the environment where they will ultimately be put to use. Focus groups may vary in their content and presentation according to the moderator, particularly when intimate consumer products such as toilet paper and tampons 25 are demonstrated. Any such limitations in the focus groups may lead to inaccuracies in the analyses of such products.

As used herein representative consumers include people such as, but not limited to, target consumers. Target consumers can be representative heads of household, users of competitive products, defined by age groups, suppliers from

vendors, employees of one or more select companies, including the company conducting the test, or other target groups.

Accordingly, this invention provides a method for testing consumer preferences for products which meet the above needs. Particularly, the invention 5 provides a method for testing consumer products without entailing the high cost of manufacturing prototypes. Further, the invention provides a method for testing products while allowing for easy tabulation and/or manipulation of the data input by the representative consumers. The invention provides for collection and tabulation of spontaneous audio input. The invention provides a method for 10 testing consumer products without entailing undue security risks. The invention provides a method for testing consumer products with rapid, if not immediate, iterations.

#### SUMMARY OF THE INVENTION

15 The invention is a method of obtaining consumer information. The method comprises the steps of providing a readable computer file to at least one representative consumer. The readable computer file contains at least one virtual image of at least one consumer product. At least one question regarding the consumer product is provided. The question may be provided from the same 20 or a different computer file. Alternatively, the question may be posed by a moderator in a group setting, in a one-on-one interview or taken from a written questionnaire. The representative consumer provides input regarding the virtual consumer product. The input may be in the form of answers responsive to one or more questions posed to the representative consumer. The input may be 25 spontaneous. The input is received into the computer.

Data corresponding to the input provided by the representative consumer is then disposed in a computer file. The data may be automatically tabulated and/or manipulated. The data may also be downloaded so that data corresponding to the answers to the questions are available for further

refinement. The data may be provided as numeric keyboard responses, as audio input which allows for voluntary comments not directly responsive to the questions or by other known means. The data may be automatically tabulated and summarized.

5

#### DETAILED DESCRIPTION OF THE INVENTION

The method according to the present invention comprises the following steps. First, a digital image of a consumer product is either acquired or created. Optionally, the digital image may be embedded into a virtual environment where the consumer product will ultimately be used. Next, the digital image of the consumer product, and optionally the environment, is merged with one or more questions to determine the preferences, likes, dislikes, etc., of one or more representative consumers. Optionally, a means is provided to tabulate, manipulate and/or summarize the data representing the input from the representative consumers.

15. If the images are acquired, the images may be acquired from a suitable input device. Suitable input devices include a scanner, a digital camera or a digitized analogue image. Acquired images may be used to either represent the consumer product under consideration, one or more environments in which the consumer product may be used, or both.

20. If an environment is used in conjunction with the consumer product, the environment may be a predetermined representative environment, or it may be specifically tailored to the particular test or consumer product. If the environment is specifically tailored, the environment may be provided by the representative consumer so that it identically matches his or her decor, home setting, etc. If the consumer provides the tailored environment, it may be in the form of one or more digital photographs taken at various angles and enlargements. Alternatively, the environment may be customized to fit the particular needs and uses of the consumer product under consideration. For example, the image of the environment may change in response to answers the representative consumer

provides regarding the consumer product. The image of the environment may have dynamic motion to show the environment from various angles.

Once the images are acquired, the images are saved to any digital image file. Suitable and well known digital image files include JPG, TIF, GIF, PICT,

5 EPS, TARGA, and BMP.

Alternatively, the consumer product under consideration and/or even the environment may be developed from scratch using any of the well known 3-D modeling programs. Suitable 3-D modeling programs include Raydream, Poser,

Maya, 3-D Studio MAX, Rhino, Alias, and AutoCAD. Known artistic and industrial

10 3-dimensional design software programs, or 2-D image editing software programs, may be used to make virtual images of the consumer product. The drawing and modeling tools in such software may be applied, using known techniques. Suitable software includes Photo Shop and Picture Publisher, which can be used for this purpose.

15 Alternatively, one may use a geometry generation program to create repeating patterns. A vector-based program, such as PowerCAD, AutoCAD, Illustrator or Freehand DraffixCAD, may be used to construct the images of the consumer product under consideration. Such images are preferably imported into a raster-based program for subsequent manipulation. Suitable raster-based  
20 programs include Adobe Photo Shop and Paint Shop Pro.

Once the images, and optional environment, are saved to one or more digital image files, the images may be compiled, assembled and/or animated.

Compiling places one or more digital images together in a format and sequence suitable for viewing by the representative consumer. During compiling, relevant or

25 consecutive digital files may be placed together in a photographic spreadsheet or matrix. Suitable programs for compiling a photographic spreadsheet or matrix include Quicktime VRStudio, Adobe After Effects, Poser, and Adobe Premiere. Another form of compiling includes digital video processing in order to provide

apparent motion. Suitable programs for compiling images into a digital video include Adobe Premiere, Adobe After Effects, Poser, and Digital Video Producer.

The representative virtual consumer product, optional environment, and demonstration thereof, is now in a form which can be used for manipulation and 5 is further usable to make a demonstration for the representative consumer(s) to view.

If desired, the images of the consumer products may be manipulatable by the representative consumer. If the images are manipulatable, they may be manipulated in a linear fashion. For example, the representative consumer may 10 hit the appropriate keystroke or icon to cause step-wise magnification or reduction in the size of the virtual consumer product. Alternatively, manipulation may be interactive. During interactive manipulation the representative consumer can provide ongoing feedback to change the apparent view of the virtual consumer product.

15 Alternatively or additionally, the virtual image of the consumer product may be manipulated to show one or more views. Different views may show different sizes, perspectives, colors, etc., or other attributes of the virtual consumer product. Additionally, within a given view, the virtual consumer product may be manipulated. The manipulation may be interactive, allowing the representative 20 consumer to move or rotate views of the consumer product and/or its environment. Such manipulation may include dynamic motion, disassembly and apparent usage of the object, as well as other manipulations judged to be important for the particular test.

25 The next step is to create the consumer test which will be shown to a representative panel of consumers. In this test, multiple options and features of the consumer product may be merged into an interactive questionnaire. The interactive questionnaire may be provided in an on-line format, read from a CD-ROM, embedded in the hard drive etc. Alternative formats for placing the test before the representative consumers include videotaping and still picture

projection. Yet other alternative formats for placing the test before the representative consumers include focus groups where a moderator poses the questions to a panel of consumers, focus groups where a moderator conducts one-on-one interviews, and hard copy descriptions.

5 In this test, multiple options and features of the representative consumer product can be displayed with test questions titles and explanatory remarks, using multimedia programs. Suitable multimedia programs include Flash, Director, Author Ware, and Authorware Attain. These programs can generate self-contained executable content or they can generate content which is later 10 incorporated into any language suitable for use with Intranet or Internet pages such as Hypertext Markup Language.

If desired, an introduction to the consumer test may be included. The introduction may spell out the purpose of the test or, alternatively, may leave the intent and objectives of the test open-ended to determine the presence and level 15 of various consumer perceptions. Optionally, the introduction may demonstrate advertising or a multi-media message which may be of interest.

The test is placed with the representative consumers, using the virtual images saved in the multimedia file, and the optional environment. The representative consumers may input quantitative or qualitative data, answers to 20 the questions, voluntary comments, free hand sketches of how the representative consumer would like the product to look, etc., using any Vector graphics program or a macro written into the graphics file. This allows the representative consumer to alter the dimensions of the virtual product, delete predetermined features from the consumer product, or combine/add features to the consumer product from a 25 menu.

The consumer test may be distributed via networked distribution such as the Internet, World Wide Web, an internal company network, inter-company networks, or within the Intranet of an individual company, via CD-ROM, DVD, Zip drive, Jazz drive, floppy drive, etc. Maintaining the consumer test within an

Intranet or CD-ROM allows the test to be limited to only those select employees which have a need to know the information conveyed by the test itself and/or have an obligation not to disclose details about the virtual consumer products under consideration. If a broader base of representative consumers is desired,

5 the test may be put on the Internet. Alternatively, the consumer test may be distributed to select representative consumers via closed-circuit television broadcast.

At least one, and preferably a plurality, of the representative consumer products are shown to at least one, and preferably a panel, of representative consumers using one, or more, of the aforementioned formats in any combination. If desired, the format in which the representative consumer product is displayed may change depending upon the responses to given questions. The consumer test may be dynamically refined in real time to allow expanded, intermediate and abbreviated versions of the test, depending upon the depth of

10 consumer research desired and the answers provided. Various questions may be added, omitted, or expanded upon at the discretion of the tester. Alternatively, the flow, number and sequence of the questions may be dictated by the representative consumers' response(s) to prior questions. Certain questions or groups of questions may be omitted or expanded upon depending upon the

15 answers to prior questions. The order of the representative products and questions may be permuted, to eliminate any sequence effects.

20

If desired, the consumer test may include human interaction, such as demonstrated usage of the product. This demonstrated product usage and/or human interaction may be provided through three-dimensional modeling and

25 manipulation of the product using human modeling programs such as Poser. If desired, the manipulation may be done by the representative consumer. The representative consumer may indicate features and regions of the product where he or she is interested in the product function. Such interest by the representative consumer may be automatically registered and tabulated using the

process described herein, allowing the researcher to better understand the portions of the product of interest to the representative consumers.

Alternatively, the computer program may automatically provide additional product manipulation and/or banks of questions, dependent upon the input given 5 by the representative consumer. For example, if the representative consumer indicates a strong interest in a particular portion of a virtual consumer product, the program may automatically prompt more detailed questions about that portion of the product.

10 Additionally, the tabulation of responses to multiple choice questions, or other quantitative input, may automatically flag questions which are apparently misinterpreted by the representative consumer. If too many questions are misunderstood by the representative consumer, the test may be coded to automatically delete those questions, or to substitute alternative questions.

15 During the test, the representative consumer inputs the data, using the mouse, keyboard entries, touch screen, audio input through a microphone, etc. Keyboard, mouse, touch screen entries and the like may be responsive to multiple choice selections which are directly summarized and tabulated by data analysis programs such as Quanvert, SPSS, or JMP. Such entries may be stored in a data file format such as Access, Sequel, etc. Using multiple choice 20 selections allows for numeric ratings and quantitative input. The quantitative input may be automatically manipulated using well known statistical analysis programs such as Quantum, SPSS, or JMP. Thus, the quantitative data may be automatically tabulated, and/or summarized without the need for manipulation or other input by the tester.

25 Audio input can be transcribed using any voice recognition software such as Kurzweil Voice Pad, Dragon Dictate, or ViaVoice. The transcribed voluntary comments received from the representative consumers may be key-worded to flag particularly important concepts or results and placed in a voice recognition text file. The voice recognition text file may be transferred to a transcription

program for Verbatim coding of key words. The Verbatim coding allows for manipulation of the data taken originally from the audio input of the consumer and will highlight particular comments provided during the audio input stage of the consumer test. For example, a particular word or phrase may be coded and 5 counted to see how many times it occurs in either a positive or negative sense, or is considered with other words or phrases. Verbatim software such as Visio may be used for this purpose.

If desired, the computer may contain one or more files for transferring text material to voice output. The text material may be based upon input received 10 from the representative consumer during the test. Alternatively, the text material may be pre-programmed and independent of the representative consumer's input. The voice output may provide the user with further instructions as to conducting the test, may provide flags of relevant data groupings to the persons conducting the test, or may be used to highlight other important events during or 15 after the test.

Free-hand drawings of how the consumer desires the test products to look, or other input the representative consumers may have relative to the test products, may be separately downloaded and printed for qualitative study. The free-hand drawings may be considered and tabulated by statistical programs 20 such as those set forth above.

Alternative uses for the virtual images of the representative consumer product include conversion to and from AutoCAD formats. This allows actual manufacturing of the representative consumer product to occur without the necessity of obtaining additional drawings. The virtual images may be converted 25 directly from 3D illustrations to 2D illustrations for use in advertising, promotional or educational literature.

While it is expected that the virtual images of the representative consumer product will provide objects visible to the representative consumer, the invention is not so limited. The virtual images may be a text description, cartoon

representation, or schematically represented as a flow sheet process. All such variations are contemplated and within the scope of the present invention.

WHAT IS CLAIMED IS:

1. A method of obtaining consumer information, said method comprising the steps of:
  - a) providing a readable computer file, said readable computer file having at least one virtual image of at least one consumer product therein, characterized in that said readable computer file has at least one question regarding said consumer product, said readable computer file being provided to at least one representative consumer; and
  - b) receiving input from said representative consumer, said input being responsive to said at least one question.
2. A method of testing a consumer product, said method comprising the steps of:
  - a) designing a plurality of virtual representative consumer products;
  - b) characterized by placing images of said virtual representative consumer products and questions regarding said virtual representative consumer products in a readable computer file;
  - c) displaying said readable computer file to at least one representative consumer;
  - d) inputting answers to said questions into a readable computer file; and
  - e) downloading data corresponding to said answers from said computer readable file.
3. A method of testing consumer products comprising the steps of:
  - a) designing at least one representative consumer product;
  - b) placing at least one virtual image of said at least one representative consumer product in a readable computer file;
  - c) characterized by placing questions regarding at least one consumer product in a readable computer file; and

- d) displaying said readable computer file to at least one representative consumer, whereby said representative consumer can input responses to said questions into a computer readable file.
- 4. A method according to Claims 1 and 3 characterized in that input is received into said computer file via a microphone, whereby said representative consumer may provide spontaneous audio input.
- 5. A method according to Claims 1 and 2 wherein said input comprises numeric data, characterized in that said numeric data is automatically tabulatable.
- 6. A method according to Claims 1, 2, and 3 characterized in that said images and said questions are distributed to said representative consumers via an Intranet.
- 7. A method according to Claim 6 wherein said Intranet distribution is limited to employees of a single entity.
- 8. A method according to Claims 2 and 3 wherein said images of said consumer products are manipulatable by said representative consumer.
- 9. A method according to Claims 1 and 2 comprising a plurality of images of said consumer products, whereby a first image is shown to said representative consumer, characterized in that the selection of subsequent images shown to said consumer is dependent upon input received from said consumer responsive to said questions regarding said first image.
- 10. A method according to Claims 1, 2, and 3 wherein said images of said consumer products have apparent motion.
- 11. A method according to Claims 2 and 3 wherein said representative consumer product are shown in an intended use environment for such representative consumer products, characterized in that said environment being manipulatable by said representative consumer.
- 12. A method according to Claim 1 further comprising the step of converting a text file to voice output.

13. A method according to Claim 12 characterized in that the content of said voice output is dependent upon said input provided by said representative consumer.